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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/017,990	12/14/2001	Xiaoju Wu	TI-31214	8404
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23494 7590 08/21/2002

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EXAMINER

FARAHANI, DANA

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 08/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/017,990

Applicant(s)

WU ET AL.

Examiner

Dana Farahani

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Bipolar Junction Transistor with Electrical Hole Isolator.

2. The disclosure is objected to because of the following informalities: on page 6, line 7, the phrase "substrate 20" should be "substrate 22".

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4-6, 8, 13, 15, 17, 21-24, 27, 29, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Husher (U.S. Patent 5,179,432).

Regarding claims 1, 8, 13, 15, 17, 21-24, 27, 29, and 30, Husher discloses in figure 3 an electronic circuit, comprising: a semiconductor substrate 100; a first layer 110 in a fixed physical relation to the semiconductor substrate; a well 160 formed in the first layer, wherein the well comprises a first conductivity type and has a side dimension and a bottom dimension; a first enclosure 180, and 170, surrounding the side dimension

and the bottom dimension of the well, wherein the first enclosure comprises a second conductivity type complementary of the first conductivity type and has a side dimension and a bottom dimension; and a second enclosure (190 and substrate 100) surrounding the side dimension and the bottom dimension of the first enclosure, wherein the second enclosure comprises the first conductivity type.

Regarding claim 2, layer 150 is a buried layer (see column 4, lines 53-56).

Regarding claim 4, layer 170 is adjacent layer 150.

Regarding claim 5, layer 110 is an epitaxial layer (see column 4, lines 53-60).

Regarding claim 6, see figure 3.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 7, 10, 14, 25, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Husher.

Regarding claims 3, 7, 10, 14, and 25, Husher discloses the claimed invention, as above discussed, except for first conductivity type being n-type, and second conductivity type being p-type. It would have been obvious to one of ordinary skill in the art at the time of the invention to make the first conductivity type n-type, and the second

conductivity type p-type in order to make a PNP bipolar transistor instead of an NPN bipolar transistor.

Regarding claims 26 and 28, Husher discloses a dosage of  $5 * 10^{15}$  for buried layer 170 with an energy of 80 KeV (see column 4, lines 63-68).

Husher does not disclose an energy on the order of 60 KeV.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to lower the energy in order to adjust the ion implantation process with the existing ion implanting environment, that is temperature and time.

7. Claims 9, 11, 12, 16, 18, 19, and 20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Husher as applied to claims 8 above, and further in view of S.M. Sze, Semiconductor Devices, Physics and Technology.

Husher renders the claimed invention obvious except for a circuitry connecting the first terminal (first enclosure) to the second terminal (second enclosure).

Sze discloses on page 139, figure a, a circuitry at the left hand side of the figure for connecting the base of a bipolar transistor to the emitter in order to obtain the switching characteristic of the transistor, shown below figure a. The first enclosure and the second enclosure are emitter and base, respectively. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a circuitry to connect the base and emitter in order to obtain the switching characteristic of the bipolar transistor in Husher's invention.

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (703)305-1914. The examiner can normally be reached on M-F 8:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703)306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Dana Farahani  
August 16, 2002

  
Olik Chaudhuri  
Supervisory Patent Examiner  
Technology Center 2800